

PYCNOGONIDA OF THE WESTERN PACIFIC ISLANDS, IX. A SHALLOW-WATER GUAM SURVEY, 1984

C. Allan Child

Abstract.—Thirteen species of pycnogonids are reported from a 1984 survey of the shallow waters of Guam Island (13°30'N, 144°45'E) along with several juveniles and larvae which are left unidentified. One new species, *Eurycyde sertula*, is described and figured and its relationships with other species of the genus are discussed. The relationships and distribution of the other twelve species are listed and discussed.

The only previous report on Guam (Marianas Islands, 13°30'N, 144°45'E) pycnogonids (Child 1983) lists two species, both new, while concentrating mainly on the fauna of the western Caroline Islands at the Palau Islands. The present report contributes eleven additional species to the known Guam fauna, most of them previously known from nearby island groups. One species is described as new, *Eurycyde sertula*, and distributional data is given for all species.

These specimens were taken during most months of the 1984 year as the result of a shallow-water survey of the Island's macro- and microfauna. They were collected by Roy K. Kropp and others as part of PhD thesis work by Dr. Kropp. With the help of SCU-BA, Kropp was able to sample the fauna of most of the Guam coast except for the most inaccessible areas. Specimens are deposited in the Pycnogonida collections of the National Museum of Natural History, Washington, D.C. (USNM).

Class Pycnogonida
Family Ammotheidae
Genus *Achelia* Hodge, 1864
Achelia assimilis (Haswell)

Ammothea assimilis Haswell, 1884:1026–1027, pl. LIV, figs. 5–9.

Achelia assimilis.—Child, 1990:312–313 [literature].

Material examined.—Calalan Bank, off Glass Breakwater, on dead branching coral in 12 m, 13 Sep 1984 (1 ♀ subadult, 1 larva).

Distribution.—This species has been taken at primarily southwestern Pacific localities and has recently been taken in Indonesia and the Philippines, all at shallow depths.

Remarks.—This is one of the most variable species in this genus whose species contain a wide variety of both intraspecific and interspecific differences. This female is fairly typical of those illustrated in previous publications.

Genus *Ammothella* Verrill, 1900
Ammothella tippula Child

Ammothella tippula Child, 1983:701–705, fig. 2; 1988a:7; 1988b:51.—Müller, 1990a:67; 1990c:99; 1990d:106.

Material examined.—Agana Bay, 300 m N of boat basin channel, reef flat outer moat, rubble from 0.6 m, 5 Mar 1984 (1 ♂ with eggs); Piti Bay, Asan reef boulder area at margin SW of Camel Rock, from washings of *Halimeda* in 0.3 m, 10 Aug 1984 (1 ♀); Pago Bay, outer reef flat in front of marine laboratory, intertidal algal mat, 5 Oct 1984 (1 ♂); Luminao, reef flat opposite Family Beach, branching coralline algae in 1 m, 27 Oct 1984 (1 ♂, 1 Juv); Pago Bay, outer reef flat off marine lab, algal mat in 1–2 m, 2

Nov 1984 (1 ♀); Tumon Bay, reef front, dead branching coral in 11 m, 4 Nov 1984 (1 Juv); Apra Harbor, Family Beach, rubble in 1.2 m, 6 Dec 1984 (1 ♀).

Distribution.—The type locality for this species is Guam in shallow water (11 meters, the deepest known capture) and it has been taken once in the Sulu Sea, Philippines, also in shallow waters. These additional records add nothing to the known distribution of the species.

Remarks.—These specimens agree well with the type series and show very little or no variation in characters, particularly with the male.

Ammothella species indeterminate

Material examined.—Agana Bay, on rubble in 9 m, 3 Feb 1984 (1 Juv).

Remarks.—This specimen differs slightly in several characters from the predominant *A. tippula*. It is possibly *A. indica* Stock, but is too immature to be assigned to any species.

Genus *Eurycyde* Schioedte, 1857

Eurycyde sertula, new species

Fig. 1.

Material examined.—Ypan, branching coralline algae on algal ridge in 1 m, 23 Sep 1984 (1 ♀, holotype, USNM 234586).

Description.—Species moderately small for genus, leg span 5.1 mm. Trunk fully segmented, without median adornment. Lateral processes closely crowded, almost touching, not quite as long as their diameters, armed with small acute sharply pointed dorsodistal tubercles, the tallest on the anterior lateral process pair, shorter on each successive pair and tiny on posterior pair, tubercles without setae or spines. Ocular tubercle cylindrical, tapering distally, about 2.5 times longer than its diameter, armed with 5 large distal spines with setules arranged radially around tubercle tip which is terminally flat. Eyes large, filling distal half of ocular tubercle. Short neck constricted

greatly just ventral to ocular tubercle which is situated just posterior to anterior rim of cephalic segment. Abdomen very broad, inflated, short, less than twice as long as its maximum diameter, armed with single encircling wreath of eleven long tubular spines bearing setules, spines situated slightly proximal to median circumference.

Proboscis typical of genus, basal stalk approximately 0.3 times length of distal proboscis segment which is more inflated proximally and slightly shorter than usual for genus.

Chelifores shorter than those of most species, first of scape segments equal in length to basal segment of proboscis, armed with single dorsodistal thick spine with setules. Second scape segment slightly shorter than first, more slender in diameter, armed with 8 thick spines matching that of first segment and 1–2 short distal setae. Chela vestigial, finger reduced to tiny knob, palm cylindrical, unarmed.

Palp typical for genus; of 10 segments. First two segments only as long as their diameters, third segment longest, armed with few short distal setae. Fourth segment very short, little longer than its diameter, armed with 2–3 short setae. Fifth segment slightly shorter than third, slightly inflated at midpoint, armed with long lateral spine and several distal short setae. Terminal five segments short, each armed with ventral field of short setae.

Oviger third segment longest, slightly longer than fourth which is armed with few short lateral setae. Fifth half length of fourth, armed with few lateral setae. Strigilis four segments armed with 2–3 short distal setae and endal denticulate spines in the formula 5: 4: 3: 5, with a small terminal claw shorter than terminal segment. Distal denticulate spine of terminal segment twice size of other spines, forming subchelate oviger terminus. Denticulate spines with four broad proximal lobes and two tiny distal lobes.

Legs moderately short, proximal segments broad, distal segments each with de-

creasing diameters. First coxae of anterior 3 pairs of legs with an anterodistal small conical tubercle armed with few tiny setae and much larger posterodistal tubercle as long as segment diameter, armed with two long inflated spines bearing setules and 1–2 short distal setae. First coxae of the posterior pair of legs have distal tubercles of similar size but without long inflated spines. Second coxae armed with 4–5 short lateral and ventral setae, third coxae with 2–3 short ventrodistal setae. Femorae the shortest of the major segments, armed with 1–2 short ventral setae and 5 long inflated dorsodistal and laterodistal spines bearing setules. First tibiae of smaller diameter, the longest major segments, armed with 3 long inflated dorsomedian spines with setules, 2 dorsodistal long inflated spines, the distal spine longest. Second tibiae similarly armed dorsally and with row of 4–5 ventral short setae. Tarsus subtriangular with 1–2 short ventral setae. Propodus only slightly curved, inflated, with 2 long dorsal setae and 7–8 short ventral sole spines. Claw half propodus length, slender, moderately curved, without auxiliaries.

Measurements (in mm).—Trunk length (chelifore insertion to tip 4th lateral processes), 1.68; trunk width (across 2nd lateral processes), 1.28; proboscis length (distal segment), 1.39; abdomen length, 0.61, third leg, coxa 1, 0.12; coxa 2, 0.15; coxa 3, 0.12; femur, 0.34; tibia 1, 0.38; tibia 2, 0.35; tarsus, 0.09; propodus, 0.24; claw, 0.12.

Distribution.—The new species is only known from its type locality, the southeast coast of Guam at Ypan, on reef flat among intertidal coralline algae.

Etymology.—The species name is Latin (*sertula* is the diminutive of *serta*, meaning a garland or wreath) and refers to the single layered wreath-like circlet of long spines on the abdomen.

Remarks.—This third described species from western and mid-Pacific localities differs from the other two principally in the presence, absence, and armament of tubercles on the lateral processes and first coxae.

Almost all known species of *Eurycyde*, the tropical species in particular, are very closely related and there exists only a narrow range of morphological characters for use in separating these species. One of the most reliable characters is that of tuberculation of the trunk extremities and leg coxae. Most known species have conspicuous dorsodistal tubercles on the first coxae and their size and armament are diagnostic.

Of the two known western Pacific species, *E. setosa* Child (1988a:8–10, fig.3) is the only one with lateral process tubercles which are very similar to those of *E. sertula*. The most recently described species (Müller 1990b:188–191, figs. 11–18), *E. longioculata*, lacks any form of lateral process tubercles, but has first coxae tubercles very similar to those of *E. setosa*. Both species have first coxae with a smaller anterodistal tubercle and a larger posterodistal tubercle, but those of *E. setosa* are clothed in short setae while those of *E. longioculata* have no conspicuous setae or spines. The coxae tubercles of *E. sertula* differ in having a much smaller anterodistal tubercle without setae and a much larger more robust posterodistal tubercle bearing pairs of long inflated spines with setules and 2–3 short setae, all distally placed. The posterior pair of first coxae have distal tubercles of almost the same size and neither bear long spines but only shorter setae.

Other major differences are in the length and spination of the ocular tubercle and abdomen. The new species has one of the shortest and broadest abdomens known in this genus and the eleven long spines are placed in a unique wreath-like fan around its circumference. The only other known species with a short abdomen bearing a circlet of long spines is *E. gorda* Child, but the abdomen is not nearly so inflated as that of the new species nor are the spines in a single flat plane as are those of *E. sertula*. The abdomen of *E. setosa* is unknown, having been broken off at its base before the unique type specimen was examined.

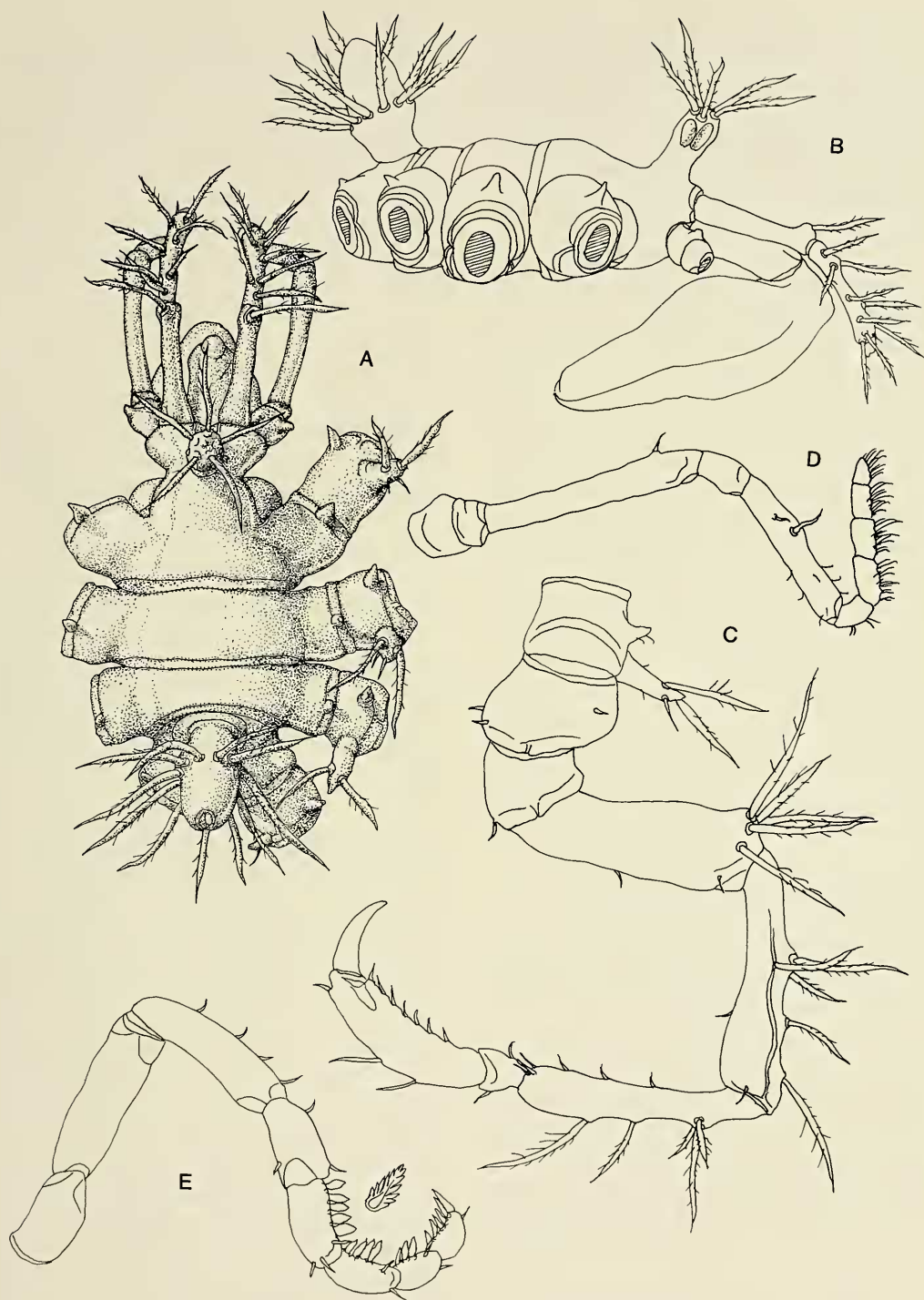


Fig. 1. *Eurycyde sertula*, holotype female: A, trunk, dorsal view; B, trunk, lateral view; C, third leg; D, palp; E, oviger with one denticulate spine, enlarged.

The ocular tubercle of the new species is very like that of *E. setosa* except that it is slightly shorter and the eyes are placed more distally in *E. sertula*. It is very different from the tall distally inflated ocular tubercle of *E. longiocolata*. The count of long spines at the ocular tubercle tip differs for each of these species.

The legs, ovigers and palps of most *Eurycyde* species are remarkably alike except for interspecific differences in length versus diameter. Generally among the species of *Eurycyde*, (and among many other genera), the longer the appendage, the more slender are its segments. There are relatively minor differences in setae numbers but the numbers of long inflated spines bearing setules are more diagnostic as is their placement or absence. Their length varies among the species but those of the new species are somewhat shorter than usual while the long spines of *E. longiocolata* appear to be longer than average.

The combination of lateral process, first coxae, abdomen and ocular tubercle characters discussed and compared above appear to be sufficient to designate this unique specimen as a new species.

Genus *Tanystylum* Miers, 1879
Tanystylum rehderi Child

Tanystylum rehderi Child, 1970:302–306, fig. 5; 1983:705; 1988b:53–54.—Müller, 1989:126, figs. 22–39.

Material examined.—Calalan Bank, off Glass Breakwater, reef front on dead branching coral in 12 m, 13 Sep 1984 (2 ♂, 1 ♀). Luminao, reef flat opposite Family Beach, on branching coralline algae in 1 m, 27 Oct 1984 (2 ♂ with eggs, 2 ♂, 3 ♀, 1 Juv). Tumon Bay reef front, on dead branched coral in 11 m, 7 Nov 1984 (1 larva, probably this species).

Distribution.—This species was described from specimens taken in Bora Bora and Moorea in the Society Islands, but was not

found again in the former locality by Müller (1990b:185) in his survey. It was subsequently reported after its original description from the Palau Islands (Child 1983), on Aldabra Atoll (Child 1988b) in the Indian Ocean, and at the type locality on Moréa (Müller 1989). The 11 meter depth given above is the deepest capture for this species which is usually taken in depths around 1 meter or less.

Remarks.—There is little to separate these specimens, particularly the large Luminao suite, from the type description. The large styliform proboscis shape of this species differs only slightly from those of several other species in this genus. What makes this species differ from the others are the height and shape of the tall rounded ocular tubercle, the abdomen with its basal swelling, and the male oviger with its wedge-shaped seventh oviger segment. The seventh oviger segment in *Tanystylum* either possesses or lacks a large lateral apophysis with long setae in the male, but that of this species is wedge-shaped rather than square or cylindrical as in most species bearing this character.

Genus *Anoplodactylus* Wilson, 1878
Anoplodactylus tenuicorpus, new combination

Anoplodactylus attenuatus Child, 1988a:12–14, fig. 5; 1988b:56, preoccupied by *Phoxichilidium attenuatum* Hodge, 1864.

Material examined.—Calalan Bank, off Glass Breakwater near Magundas, dead branching coral in 10 m, 16 Oct 1984 (1 ♀).

Distribution.—This species was described from the southern Philippines and subsequently found on Aldabra Atoll, Seychelles Islands, in the western Indian Ocean. This third report places it to the east of the type locality, at Guam, in the deepest capture thus far. It was previously taken in waters up to 6 meters deep.

Remarks.—No other species of this very

numerous genus is as attenuated as this species nor does any other have the serrated major heel spine in combination with this elongation of the trunk. The one species with a large serrated heel spine and a rather elongate trunk is *A. pectinus* Hedgpeth. Hedgpeth's species has shorter trunk segments, shorter lateral processes, a shorter proboscis, shorter oviger terminal segment, and in the male, has only a single cement gland opening per femur.

This species is easy to identify regardless of the sex of any specimen because it has the longest trunk segments of any known species. If the male is present, identification is made even easier by examination of the femorae which bear two cement gland pores.

Anoplodactylus chamorrus Child

Anoplodactylus chamorrus Child, 1983:705–707, fig. 3; 1988a:16; 1990:330–331.

Material examined.—Tumon Bay, reef flat off Fujita Hotel, rubble on outer reef platform in less than 1 m, 23 Mar 1984 (1 Juv). Agana Bay, 300 m N of boat basin channel, on rubble in 13 m, 25 Apr 1984 (1 ♀). Tanguisson Point, near bench margin, from intertidal algal turf, 17 May 1984 (1 ♀). Pugua Patch Reef (Double Reef), on rubble from 12 m, 3 Aug 1984 (1 Juv). Piti Bay, S of Camel Rock in boulder area at end of reef margin, from intertidal *Halimeda* washings, 10 Aug 1984 (1 ♂, 3 Juv). Sella Bay, from algae in 3 m, 14 Sep 1984 (1 Juv). Calalan Bank, off Glass Breakwater, from dead branching coral on reef front in 12 m, 13 Sep 1984 (1 ♀). Pago Bay, in reef front rock at 2.5 m, 18 Sep 1984 (2 ♀). Same locality, reef flat toward Pago River, in algae from intertidal reef pool, 21 Sep 1984 (1 ♀, 1 Juv). Luminao, reef flat near Magundas, on reef rubble in 1.3 m, 13 Oct 1984 (2 ♀). Calalan Bank, off Glass Breakwater near Magundas, dead coral rubble in 10 m, 16 Oct 1984 (1 Juv). Pago Bay, reef flat in front of marine laboratory, several samples from

algal turf in 1–2 m, 17 and 20 Oct 1984 (2 ♀). Same location, from algal turf, after typhoon, 31 Oct and 2 Nov 1984 (1 ♂ with eggs, 2 ♂, 1 ♀, 2 Juv). Tumon Bay, reef front, from dead coral in 11 m, 7 Nov 1984 (1 Juv, 1 larva, possibly this species). Anae Island, halfway between island and shore, from algae in 3 m, 30 Nov 1984 (2 ♂, 3 ♀, 2 Juv).

Distribution.—From the wealth of specimens reported here, it would seem as though the longstanding “home” of this species is Guam. On the other hand, the species has been taken also at several localities in the southern Philippines and more recently on the Great Barrier Reef of Australia. Like many other species reported herein, the maximum depth records for this species are being extended by these new Guam records. The species had been found in depths of up to 3–4 meters and the Guam records now extend this known depth to 12 meters.

Remarks.—It is quite possible that some of the juvenile specimens listed here are not this species, but there is no other species known on Guam which bears the juvenile characters borne by these specimens. There are few species known with the combination of characters including the broad lateral ‘collars’ anterior to the first lateral processes, the closely crowded lateral processes separated only at their distal ends, the single tubular cement gland orifice per femur, the single major heel spine and very short propodal lamina, and an oviger with an extremely long first segment (almost twice as long as that of ovigers on other compact species). The juvenile specimens examined above have most of the characters listed except for cement glands and ovigers. The anterior collars and very crowded lateral processes are the most prominent characters in these juveniles.

Anoplodactylus glandulifer Stock

Anoplodactylus glandulifer Stock, 1954:80–84, fig. 36.—Child, 1983:273–274 [liter-

ature]; 1988b:58–59.—Nakamura & Child, 1988b:813.—Müller, 1990a:74.

Material examined.—Agana Bay, 300 m N of boat basin channel, on rubble in 9 m, 3 Feb 1984 (1 ♂).

Distribution.—This is a true Indo-West Pacific species, known from the Red Sea and Kenya to as far west as Samoa and as far south as the Great Barrier Reef, Australia, in many shallow-water habitats.

Anoplodactylus longiceps Stock

Anoplodactylus longicollis Williams, 1941: 36–38, figs. 2–5 [preoccup.]

Anoplodactylus longiceps Stock, 1951:16 [footnote]; 1954:83 [text]; 1956:97–98, figs. 14c–d.—Clark, 1963:56 [key].—Child, 1975:20, fig. 9f; 1990:331.

Material examined.—Calalan Bank, off Glass Breakwater, dead coral rubble in 10 m, 16 Oct 1984 (1 ♂).

Distribution.—This species is known from the east and west coasts of Australia and from the Kei Islands in eastern Indonesia in depths of 28–134 meters. This Guam specimen extends the known distribution of this species considerably into the Northern Hemisphere, but the specimen was taken within its known depths.

Remarks.—This species is very distinctive and is one of the relatively few known to have two cement gland orifices per femur (similar to those of *A. tenuicorpus*, listed elsewhere in this report). This Guam specimen differs very slightly from those figured in the literature. It has slightly shorter appendages with the tubercles of the femorae and first tibiae notably shorter, and the segments of the ovigers and chelifores are slightly shorter. The prominent propodal heel has two stout spines rather than the single spine borne by the type specimen, and the neck of the Guam specimen is swollen to accommodate the broader base of an ocular tubercle larger than that of the type. Other than these minor differences, the

Guam specimen agrees very well with the type figures.

Anoplodactylus pycnosoma (Helfer)

Peritrachia pycnosoma Helfer, 1938:176–177, fig. 7.

Anoplodactylus pycnosoma.—Child, 1983: 708 [literature].—Nakamura & Child, 1983:50.—Hong & Kim, 1987:161.—Child, 1988a:20; 1988b:59.—Müller, 1990a:77; 1990c:100–102, figs. 7–13.

Material examined.—Pago Bay, reef flat near outer margin, from *Halimeda* washings in less than 1 m, 10 Feb 1984 (1 ♀). Tumon Bay, outer reef platform off Fujita Hotel, rubble in less than 1 m, 23 Mar 1984 (1 ♂). Pago Bay, reef flat in front of marine laboratory, algal turf in 1 m, 20 Oct 1984 (1 ♂, 1 ♀). Luminao, reef flat opposite Family Beach, branching coralline algae in 1 m, 27 Oct 1984 (2 ♀, 1 Juv). Adelup Point, on dead *Acropora* coral in 16 m, 20 Nov 1979 (1 ♂).

Distribution.—This often collected species is known from the African coast at Kenya and Tanzania to Japan, Korea, Philippines, Palau Islands, and with these records, Guam, all in very shallow waters.

Remarks.—The male has 5–8 femoral cement gland pores which serve as a stable recognition character in this otherwise rather plain species.

Family Endeididae Norman

The family name should have the entire suffix after the name instead of the suffix forming part of the body of the name as has been the case prior to this.

Genus *Endeis* Philippi, 1843

Endeis mollis (Carpenter)

Phoxichilus mollis Carpenter, 1904:182–183, figs. 1–7.

Endeis mollis.—Utinomi, 1971:327 [literature].—Stock, 1975a:1083–1085; 1975b: 76.—Nakamura & Child, 1983:41; 1988a:

664.—Child, 1988a:20–21.—Arnaud, 1988:52.

Material examined.—Tumon Bay, reef front, on dead finely branched coral in 11 m, 7 Nov 1984 (1 ♀ Juv, 1 Juv).

Distribution.—This is a pantropical shallow-water species.

Remarks.—This identification is based on the gut diverticula which in these specimens is relatively straight and without the conspicuous pockets or caeca of other Pacific species and these young specimens also lack the leg swellings and conspicuous leg spines of other species. It is probable that this set of characters means that these specimens are *E. mollis*, but an adult male from Guam is necessary to confirm this identification.

Family Callipallenidae Hilton

Genus *Callipallene* Flynn, 1929

Callipallene novaezealandiae (Thomson)

Pallene novae-zealandiae Thomson, 1884: 246–247, pl. 14, figs. 1–4.

Callipallene novaezealandiae.—Child, 1982: 277 [literature]; 1983:708; 1988a:21.—Nakamura & Child, 1988a:664.—Müller, 1990d:106.

Material examined.—Apra Harbor, Family Beach, rubble in 1 m, 20 Oct 1984 (1 ♂ with larvae, 1 ♀, 1 Juv). Luminao, reef flat opposite Family Beach, on branching coralline algae in 1 m, 27 Oct 1984 (1 Juv). Tumon Bay, reef front, on dead branching coral in 11 m, 7 Nov 1984 (1 larva, probably this species).

Distribution.—This species occupies many Indo-West Pacific localities from east Africa through Australia and New Zealand to Japan from intertidal depths to about 275 meters.

Genus *Seguapallene* Pushkin, 1975

Seguapallene micronesica Child

Seguapallene micronesica Child, 1983:709–711, fig. 4; 1990:324 [text].

Material examined.—Tumon Bay, reef front, on dead branching coral in 11 m, 7 Nov 1984 (1 ♂).

Distribution.—This species was described from the Palau Islands in intertidal depth. This additional record extends the Pacific distribution of this species to the northeast and, like many species in this report, extends its maximum capture depth to 11 meters from shallower depths.

Remarks.—There are only three species in Pushkin's genus and this species has more similarities to the other known tropical form, *S. crassa* Child (1990:321–324, fig. 4), than to Pushkin's Subantarctic type. *Seguapallene micronesica* has separated lateral processes (crowded and touching in *S. crassa*), a very short main propodal claw (longer and more typical in *crassa*), well separated triangular chelae teeth (block-like and touching in *crassa*), and moderately long and slender leg segments (shorter and robust in *crassa*).

The single character separating this genus from the much more numerous genus *Callipallene* is the presence of a large terminal oviger claw which may or may not have serrations or denticulations on its endal surface.

Family Nymphonidae Wilson

Genus *Nymphon* Fabricius, 1794

Nymphon diabolus Child

Nymphon diabolus Child, 1988a:23–25, fig. 10; 1988b:75.—Nakamura & Child, 1988a:668.

Material examined.—Agana Bay, 300 m N of boat basin channel, reef front, on dead branching coral in 9–10 m, 11 Sep 1984 (1 ♂ with eggs). Calalan Bank, off Glass Breakwater near Magundas, dead branching coral in 10 m, 16 Oct 1984 (2 ♀).

Distribution.—This species was recently reported from two localities in the southern Philippines, taken in 1–6 meters. These records extend its known distribution to the east at Guam and into slightly deeper water.

Remarks. — This small *Nymphon* is easily distinguished from the growing list of shallow-water species in the tropics by the reduced size of everything anterior to the neck in relation to the remainder of the trunk which is noticeably larger. The species is otherwise undistinguished, but with both proboscis and chelifores shorter than the length of the first or cephalic segment, the species should be easily separable. It also has a pair of conspicuous lateral tubercles on the ocular tubercle apex.

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Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.